SCIENCE ABSTRACTS

INDEX TO VOL. XXXVIII

1935

SECTION A.—PHYSICS

Price 3s. 6d.
(Free to Annual Subscribers)

LONDON:
E. & F. N. SPON, LTD., 57 HAYMARKET, S.W.1
NEW YORK:
ENGINEERS' BOOK SHOP, 168 EAST 46TH STREET

INDEX

SECTION A.—PHYSICS

1935

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KEY

TO

SUBJECT INDEX.

The Domain of Physics is divided into eight Main Classes (*e.g.*, **GENERAL PHYSICS**). Each of these Classes is, in general, divided into a number of Sections the titles of which are known as Key-Headings (*e.g.*, **Elasticity and Plasticity**), and these Sections are in turn divided into Sub-Sections under titles known as Sub-Headings (*e.g.*, "Photoelasticity"). The Key-Headings are given below arranged in alphabetical order in their classes, and the scheme of Sub-Headings adopted is indicated in the remainder of the Key.

In the Subject Index the papers are grouped under the Sub-Headings of their appropriate Key-Headings, and these Key-Headings are arranged in alphabetical order throughout the whole Index.

The general form of entry of a paper consists of its full Title, the Author's Name and the Abstract Number assigned to the paper, the sequence of the entries under any Sub-Heading being the order of publication of the Abstracts as indicated by their Abstract Numbers.

Papers on **Apparatus and Instruments** have been given an additional classification according to their Names, arranged in alphabetical order, in a **Supplementary Index** which immediately follows the SUBJECT INDEX.

For electrical papers of essentially technical interest the reader should refer to "Science Abstracts, Section B.—Electrical Engineering."

GENERAL PHYSICS.

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Atomic and Molecular Structure.
Colloids.
Crystal Structure and Properties.
Density.
Diffusion and Osmosis.
Elasticity and Plasticity.
Gravitation.
Hydrodynamics and Aerodynamics.
Kinetic Theory of Matter.
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Mass (Standards, Measurements, Apparatus).
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ASTRONOMY AND ASTROPHYSICS.

Astronomical Apparatus and Observatory Equipment.
Comets and Meteors.
Cosmogony.
Dynamical Problems (Astronomical).
Latitude and Longitude.
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Planets.
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Zodiacal Light and Gegenschein.

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Terrestrial Electricity and Magnetism.

RADIOACTIVITY.

All Abstracts relating to this subject are indexed under Radioactivity.

RADIATION.

Absorption and Transmission.
Colorimetry.
Electro-Optical and Magneto-Optical Effects.
Fluorescence and Phosphorescence. Luminescence and Afterglow.
Interference. Diffraction and Scattering.
Photochemistry (including Photography).
Photometry.
Polarisation.
Radiation, Emission.
Radiation, General Theory.
Radiation, Mechanical Effects.
Reflection. Refraction and Dispersion.
Spectroscopy.
Velocity of Light.
Vision.
X-Rays.

HEAT.

Calorimetry.
Conduction.
Convection.
Dilatation.
Melting and Boiling Points.
Temperature, Measurement of.
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Thermodynamics.
Vapour Pressure.

ACOUSTICS.

All Abstracts relating to this subject are indexed under Acoustics.

ELECTRICITY AND MAGNETISM.

Alternating-Current Networks.
Conduction and Discharge in Gases.
Conduction in Solids and Liquids.
Dielectrics and Capacitance.
Electrochemistry.
Electrons, Positrons and Protons, including Applications.
Electrostatics.
Galvanomagnetic and Thermomagnetic Effects.
Magnetism and Electromagnetism.
Medical Radiology and Electrology.
Oscillations.
Photoelectricity.
Piezoelectricity.
Thermionics.
Thermoelectricity.

KEY-HEADINGS WITH SUB-HEADINGS.

Absorption and Transmission (Radiation). Page 1269.

1. Visible Region. Dichroism.
2. Infra-Red Region.
3. Ultra-Violet Region.
4. Apparatus and Technique.
5. Unclassified.

Cross-References :
- Absorption Spectra, *see* Spectroscopy.
- Circular Dichroism, *see* Polarisation (Radiation), 4.
- Cosmic Rays, *see* Radiation, Emission, 5.

Cross-References (contd.) *:*
- Electric Waves, *see* Radiation, Emission, 4.
- γ-Rays, *see* Radioactivity, 6.
- Meteorological Optics, *see* Meteorology, 6.
- Photodichroism, *see* Photochemistry (including Photography), 2 (*j*.)
- Visibility, *see* Meteorology, 6; *also* Vision, 2.
- X-Ray Absorption, *see* X-Rays, 3 and 8.

Acoustics. Page 1270.

1. Theory of Waves and Vibrations.
2. Plates, Rods and Membranes.
3. Vibrating Columns of Air or other Gases.
4. Strings.
5. Velocity, Measurement of.
6. Propagation in the Atmosphere.
7. Supersonic Vibrations.
8. Architectural Acoustics.
9. Receivers and Reproducers.
10. Speech and Hearing. Noise.
11. Measurements of Absorption, Amplitude, Intensity, Frequency, Wave-Form, Radiation Pressure.
12. Unclassified.

Cross-References :
- Architectural Acoustics, Noise, Receivers and Reproducers, *see also* Section B.—Electrical Engineering.
- Filter Circuits, *see* Alternating-current Networks, 2.

Adsorption. Page 1274.

1. Theory.
2. Adsorption at Interfaces:
   - (*a*) Liquid-Gas.
   - (*b*) Liquid-Liquid.
   - (*c*) Solid-Gas.
   - (*d*) Solid-Liquid.
3. Electrical Phenomena at Interfaces.
4. Apparatus and Technique.
5. Unclassified.

Cross-References :
- Monomolecular Surfaces and Allied Phenomena, *see* Surface Tension and Cohesion, 5.
- *See also* Thermodynamics, 5.

Alternating-Current Networks. Page 1277.

1. Bridges for Measuring Capacitance, Inductance, Frequency and Power Factor.
2. Filter Circuits.
3. Analysis of Non-Electrical Systems into their Equivalent Electrical Circuits.
4. Unclassified.

Cross-References :
- Filter Circuits; *see also* Section B.—Electrical Engineering.
- Frequency, *see also* Oscillations, Electric, 4.

Astronomical Apparatus and Observatory Equipment. Page 1277.

Atomic and Molecular Structure. Page 1278.

1. Nuclear Constitution.
2. Artificial Disintegration of Elements and Artificial Radioactivity.
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4. Neutrons.
5. Periodic System.
6. Arrangement of Orbital Electrons.
7. Valency.
8. Molecular Structure.
9. Association.
10. Atomic and Molecular Magnitudes.
11. Unclassified.

Cross-References :
- Atomic and Molecular Rays, *see*

Cross-References (contd.):
- Kinetic Theory of Matter, 3.
- Atomic and Molecular States, *see* Spectroscopy, 2 and 3.
- Critical Potentials, *see* Conduction (Electric) and Discharge in Gases, 5.
- Dipole Moments and Molecular Polarisation, *see* Dielectrics and Capacitance, 2.
- Nuclear Moments, *see* Spectroscopy, 2g.
- Ramsauer Effect, *see* Electrons, Positrons and Protons, including Applications, 3.

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1. Specific Heat:
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   (*b*) Solids.
2. Latent Heat:
   (*a*) Fusion.
   (*b*) Evaporation.
3. Apparatus and Technique.
4. Unclassified.

Cross-References:
Heat of Adsorption, *see* Adsorption, 2.

Cross-References (contd.)*:*
Heat of Combustion, *see* Thermochemistry, 2.
Heats of Formation and Dissociation, *see* Thermochemistry, 3.
Heats of Solution and Dilution, *see* Thermochemistry, 1.
Thermodynamics of Specific Heat and Latent Heat, *see* Thermodynamics, 3.

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2. Sols:
   (*a*) Preparation and Chemical Composition.
   (*b*) Electrical Properties (Coagulation, Cataphoresis, Electroosmosis, etc.).
   (*c*) Optical Properties.
   (*d*) Viscosity and Mechanical Properties.
3. Gels:
   (*a*) Formation and Composition.
   (*b*) Optical Properties.
   (*c*) Viscosity and Mechanical Properties.

3. Gels (*contd.*):
   (*d*) Swelling, Shrinking, Synaeresis.
   (*e*) Structure.
   (*f*) Membranes.
4. Fibres.
5. Emulsions and Suspensions.
6. Apparatus and Technique.
7. Unclassified.

Cross-References:
Adsorption Phenomena, *see* Adsorption.
Brownian Motion, *see* Kinetic Theory of Matter, 5.
Surface Tension Phenomena, *see* Surface Tension.

Colorimetry. Page 1296.

1. Theory.
2. Apparatus and Technique.
3. Unclassified.

Cross-Reference:
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   (*a*) Orbits.
   (*b*) Spectra.

1. Comets (*contd.*):
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2. Conduction at Higher Pressures (Order of one Atmosphere). Spark and Arc. Mobility of Ions. Recombination of Ions.
3. Low-Pressure Discharge. Theory. Dark Space. Kathode Fall of Potential. Negative Glow. Positive Column. Electrodeless Discharge.
4. Measurement of e/m of Ions.
5. Ionisation by Electron Impact. Critical Potentials.
6. Ionisation by Collision with Atoms and Ions.
7. Ionisation by Chemical Action. Ionisation by Splashing.
8. Positive Rays (Canal Rays). Anode Rays.
9. Kathode Rays. Lenard Rays.
10. Chemical Effects of Discharge.
11. Apparatus and Methods of Measurement.
12. Unclassified.

Cross-References:
Artificial Disintegration of Nuclei, *see* Atomic and Molecular Structure, 2.
Auto-Electronic Emission, *see* Thermionics, 4.
Diffraction, Scattering, Reflection, etc.,

Cross-References (contd.):
of Electrons, *see* Electrons, Positrons and Protons, including Applications, 3.
Electric Breakdown, *see also* Section B.—Electrical Engineering.
Electron Optics, *see* Electrons, Positrons and Protons, including Applications, 6.
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Secondary Electronic Emission, *see* Electrons, Positrons and Protons, including Applications, 3.

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2. Voltage Measurement (Apparatus and Methods).
3. Current Measurement (Apparatus and Methods).
4. Resistance Measurement (Apparatus and Methods).
5. A.C. Resistance, Skin Effect.
6. Effects of Temperature, Pressure and Mechanical Stress on Resistivity.
7. Surface Conduction. Contact Resistance (including Contact Rectifiers).
8. Special Effects (Supraconductivity, etc.).
9. Conductivity :
    (*a*) Metals, Alloys and Non-Metals.
    (*b*) Liquids (including Solutions).
    (*c*) Dielectrics.
10. Unclassified.

Cross-References :
Effect of Magnetic Field on Resistance, *see* Galvanomagnetic and Thermomagnetic Effects.
Photoconductivity, *see* Photoelectricity, 4.
Rectifiers (other than Contact) and Rectification, *see* Oscillations, Electric, 3.
Single Crystals, Conductivity of, *see* Crystal Structure and Properties, 6.
Units of Measurement, *see* Mathematical Methods, etc., 3.

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    (*b*) Propagation of Heat in Steady or Variable State.
2. Conductivity Coefficients :
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    (*b*) Solids.
    (*c*) Experimental Methods.
3. Unclassified.

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4. Unclassified.

Cross-Reference :
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Cross-Reference :
Cosmic Radiation, *see* Radiation, Emission, 5.

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    (*b*) Inorganic.
    (*c*) Organic.
    (*d*) Biological.
3. Liquid Crystals.
4. Morphology of Crystals (Crystal Form, Habit, Growth).
5. Optical Properties.
6. Physical Properties (other than Optical).
7. Apparatus and Technique.
8. Unclassified.

Cross-References :
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Photoelectric Effects, *see* Photoelectricity, 2.
Piezoelectric Effect, *see* Piezoelectricity.
Reflection of Atoms and Molecules by Crystals, *see* Kinetic Theory of Matter, 3.
X-Ray Diffraction, Reflection, etc., by Crystals, *see* X-Rays.

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2 Density of Liquids.
3. Density of Solids.
4. Apparatus and Technique.
5. Unclassified.

Cross-Reference :
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2. Dielectric Constants and Electric (Dipole) Moments:
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    (*b*) Gases.
    (*c*) Liquids and Colloids.
3. Effects of Electric and Magnetic Fields.
4. Effect of Frequency.
5. Effects of Mechanical Stress, Temperature and Moisture.
6. Dielectric Loss.
7. Capacitance and its Measurement.
8. Unclassified.

Cross-References:
Refractive Index of Dielectrics, *see* Reflection, Refraction and Dispersion, 4.
Electric Breakdown, *see also* Section B.—Electrical Engineering.

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2. Osmosis.
3. Membrane Equilibria.
4. Apparatus.

Cross-References:
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Electroosmosis, *see* Colloids, 2*b*.

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    (*b*) Liquids and Solids.
    (*c*) Experimental Methods.
2. Unclassified.

Cross-References:
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Expansion of Sea Water, *see* Hydrosphere, Physics of the, 1.
Thermodynamical Theory, *see* Thermodynamics.

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3. Relations between Elastic Coefficients and other Physical Properties.
4. Plasticity.
5. Photoelasticity.
6. Vibrations and Waves.
7. Strength and Failure Tests.
8. Apparatus and Technique.
9. Unclassified.

Cross-References:
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Elasticity of Crystals, *see* Crystal Structure and Properties, 6.
Elastic Properties of Colloids, *see* Colloids, 2*d* and 3*c*.
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3. Electrolysis.
4. Ionic Mobilities and Transport Numbers.
5. Electrode Potentials and Electrode Phenomena.
6. Apparatus and Technique.
7. Unclassified.

Cross-References:
Becquerel Effect, *see* Photoelectricity, 5.
Conductivity of Electrolytes, *see* Conduction (Electric) in Solids and Liquids, 9*b*.
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Electrokinetic Phenomena, *see* Colloids, 2*b*.
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3. Unclassified.

Cross-References:
- Photoelasticity, *see* Elasticity and Plasticity, 5.

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- Photoelectric Effect, *see* Photoelectricity.
- Photophoresis, Effect of Electric or Magnetic Fields, *see* Radiation, Mechanical Effects, 2.
- Stark Effect, *see* Spectroscopy, 7.
- Zeeman Effect, *see* Spectroscopy, 6.

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2. Magnitudes (Charge, Mass, Magnetic Moments, etc.).
3. Collision: Diffraction, Scattering, Reflection, Absorption.
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5. Waves.
6. Electron Optics.
7. Kathode-Ray Oscillographs.
8. Unclassified.

Cross-References:
- Conduction of Electricity in Metals, *see* Conduction (Electric) in Solids and Liquids, 1.

Cross-References (contd.):
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- Excitation Potentials, *see* Conduction (Electric) and Discharge in Gases, 5.
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5. Unclassified.

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2. Phosphorescence.
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4. Apparatus and Instruments.
5. Unclassified.

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   - (*b*) Ettingshausen Effect.
   - (*c*) Change of Resistance in Magnetic Field.
2. Thermomagnetic Effects:
   - (*a*) Nernst Effect.
   - (*b*) Leduc Effect.
3. Unclassified.

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1. Theory.
2. Apparatus and Measurements.

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3. Diffraction.
4. Scattering.
5. Apparatus and Instruments.
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4. Liquids and Solids.
5. Brownian Motion.
6. Unclassified.

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P.V.T. Relations, Experimental, *see* Elasticity and Plasticity, 2 ; Theoretical, *see* Thermodynamics, 2.

Land, Physics of the. Page 1362.

1. Earth's Interior.
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4. Soil Physics.
5. Earth Tides.
6. Unclassified.

Cross-References :
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5. Electromagnetic Induction. Inductance.
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7. Apparatus and Technique.
8. Unclassified.

Cross-References :
Earth's Magnetism, *see* Terrestrial Electricity and Magnetism, 2.
Eddy Currents, *see* Conduction (Electric) in Solids and Liquids, 5.

Cross-References (contd.) *:*
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Instruments for Measuring Current, Voltage and Resistance, *see* Conduction (Electric) in Solids and Liquids, 2, 3 and 4.
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1. Standards.
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3. Units and Dimensions.
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5. Unclassified.

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Cross-References :
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Atomic and Molecular Rays, *see* Kinetic Theory of Matter, 3.

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5. Unclassified.

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4. Liquefaction and Solidification.
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7. Unclassified.

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5. Climatology.
6. Optical Phenomena (Aurora, Night Sky, Corona, Halo, etc.).
7. Meteorological Instruments.
8. Unclassified.

Cross-References :
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1. Generation.
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3. Rectification.
4. Measurement of Frequency.
5. Applications.
6. Unclassified.

Cross-References :
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Electric Waves, *see* Radiation, Emission, 4.
Frequency, *see also* Alternating-Current Networks, 1.
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Photochemistry (including Photography). Page 1388.

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2. Photography :
    - (*a*) Theory.
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4. Unclassified.

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   - (*a*) Preparation and Chemical Composition.
   - (*b*) Electrical Properties (Coagulation, Cataphoresis, Electroosmosis, etc.).
   - (*c*) Optical Properties.
   - (*d*) Viscosity and Mechanical Properties
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   - (*a*) Formation and Composition.
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3. Gels (*contd.*):
   - (*d*) Swelling, Shrinking, Synaeresis.
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3. Aberration (Spherical and Chromatic), Tests for Definition, Distortion, Astigmatism, etc.
4. Refraction and Refractive Indices.
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3. Heats of Formation and Dissociation.
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